भारतीय मानक
Indian Standard

IS 7591 : 2023

माल्ट सार, माइक्रोबायोलॉजिकल ग्रेड — विशिष्टि

(पहला पुनरीक्षण)

Malt Extract, Microbiological Grade — Specification

(First Revision)

ICS 07.100.99

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June 2023 **Price Group 4**

Food Microbiology Sectional Committee, FAD 31

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Food Microbiology Sectional Committee had been approved by the Food and Agriculture Division Council.

Unless the ingredients used in media for microbiological work are of uniform quality, the results obtained would be erroneous and would be unreliable. Since the media used in different laboratories often differ greatly in their quality, the results of microbiological work at different laboratories cannot be compared. Therefore, with a view to unifying the practices of different laboratories dealing with microbiology and providing guidance to the indigenous manufacturers regarding the quality of various ingredients, it has been decided to bring out a series of Indian Standard specifications for ingredients commonly used in media for microbiological work.

Malt extract is prepared from malted grains of barley, wheat and millets by digestion with water at a suitable temperature and evaporation of the strained liquid until a viscous product is obtained. It is used in the preparation of media for the cultivation of yeasts and moulds.

This standard was first published in 1975. The first revision of the standard has been brought out to incorporate following modifications keeping in view the technological advancements in this area along with the editorial changes to align it in the latest style and format of Indian Standard:

a) Since the material is now available in powdered form, the requirement of colour at **4.1** has been changed from ‘Amber or Yellow-brown viscous liquid’ to ‘Cream to brownish yellow homogenous powder’;
b) Accordingly, the requirements of ‘clarity’ and ‘*p*H’ at **4.2** and **4.3**, respectively, have also been modified;
c) Requirements of ‘density’, ‘refractive index’ and ‘total solids’ have been removed from Table 1 as these are not meant for a solid product;
d) *Mucor ramannianus* (name has been changed as *Umbelopsis ramanniana*) is very difficult to be obtained, hence, has been deleted from **4.4**, and
e) Due to its easy availability, *Aspergillus brasilensis* has been added in **4.4** as a new test organism.

The composition of the committee responsible for the formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MALT EXTRACT, MICROBIOLOGICAL GRADE — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for malt extract, microbiological grade.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards listed below:

IS No.	*Title*
IS 1070 : 1992	Reagent grade water —Specification (*third revision*)
IS 2404 : 1993	Malt extract — Specification (*second revision*)
IS 6850 : 2023	Specification for agar, microbiological grade (*first revision*)
IS 6854 : 1973	Methods of sampling and test for ingredients used in media for microbiological work
IS 9840 : 1981	Method for estimation of pantothenic acid in foodstuffs

3 TYPES

Malt extract may be of the following two types:

a) Type 1 — Diastatic malt extract suitable for brewing industry (*see* IS 2404); and
b) Type 2 — Non-diastatic malt extract suitable for use in culture media.

This standard covers requirement for Type 2 Malt Extract.

4 REQUIREMENTS

4.1 The material shall be in the form of a cream to brownish yellow homogenous powder with an agreeable and characteristic odour and sweet taste. It shall not contain any preservatives.

4.2 The material shall be 1 percent weight by volume (*w/v*) aqueous solution remains clear without haziness.

4.3 A 10 percent solution of the material in distilled water at 25 °C shall have *p*H 5.0 - 7.0.

4.4 When used as a sole supporting growth medium, it shall be able to support the growth of moulds and yeast in malt-agar medium at *p*H 7.0, as per the method of test prescribed in Annex A. The test organism used may be *Candida albicans* MTCC 183 and *Aspergillus brasilensis* MTCC 1344.

4.5 The material shall also conform to the requirements given in Table 1.

5 PACKING, MARKING AND STORAGE

5.1 Packing

The material shall be securely packed in well-filled wide mouth containers with tightly fitting lids.

5.2 Storage

The material shall be stored in a cool and dry place.

5.3 Marking

Each container shall be marked legibly to give the following information:

a) Name of the material including the words ‘Microbiological Grade’;
b) Name and address of the manufacturer;
c) Minimum net quantity; and
d) Batch and/or code number.

5.3.1 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provision of *Bureau of Indian Standards Act,* 2016 and Rules and Regulation framed thereunder and the product(s) may be marked with the Standard Mark.

6 SAMPLING

The representative samples of the material shall be drawn according to the method prescribed in IS 6854.

7 TESTS

7.1 Tests shall be carried out by the methods prescribed in **4** and in col (4) and (5) of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the experimental results.

Table 1 Requirements for Malt Extract, Microbiological Grade
(*Clause* 4.5)

Sl No.	**Characteristic**	**Requirement**	**Method of Test, Ref to**	
			Appendix of IS 2404 : 1993	**Other Indian Standard**
(1)	(2)	(3)	(4)	(5)
i)	Total ash, percent by mass, *Max*	4.5	—	IS 6854
ii)	Total reducing sugars (calculated as anhydrous maltose), percent by mass, *Min*	70	E	—
iii)	Total proteins, percent by mass, *Min*	5	F	—
iv)	Arsenic (as As), mg/kg, *Max*	1	—	IS 6854
v)	Pantothenic acid, mg/100 g, *Min*	0.2	—	IS 9840
vi)	Pyridoxine, mg/100 g, *Min*	0.01	—	IS 7530

ANNEX A

(*Clause* 4.4)

TEST FOR ABILITY TO SUPPORT GROWTH

A-1 PROCEDURE

A-1.1 Prepare two media, one containing 2 percent and the other containing 5 percent solution of the malt extract in distilled water. Add agar (*see* IS 6850) 2 percent to 2.5 percent, sufficient to have solid medium. Adjust *p*H to 7.0. Heat to dissolve and dispense the media into sterile test tubes. Autoclave at 103 kPa (15 lbs) pressure and 115 °C for 15 minutes and allow to set as slopes.

A-1.2 Use two slopes of each medium (**A-1.1**) and streak culture of *Aspergillus brasiliensis* MTCC 1344 on separate slopes. Incubate at 20 °C to 25 °C for 5 to 7 days. Examine for presence of growth of the organism. The medium containing 5 percent solution of malt extract will have at least one-and-a-half times the amount of growth, in terms of dry mass of mycelium, as that in the medium containing 2 percent solution of malt extract.

A-1.3 Use two slopes of each medium (**A-1.1**) and streak culture of *Candida albicans* MTCC 183. Incubate at 20 °C to 25 °C for up to 3 days to 5 days. Examine for the presence of growth. There shall be good growth on both the medium.

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Food Microbiology Sectional Committee, FAD 31

Organization	*Representative(s)*
ICAR - Indian Veterinary Research Institute, Izzatnagar, Bareilly	Dr Kiran N. Bhilegaonkar (***Chairperson***)
CSIR - Central Food Technological Research Institute, Mysuru	Dr Alok K. Srivastava Dr Asha Martin (*Alternate*)
CSIR - Institute of Microbial Technology, Chandigarh	Dr Suresh Korpole Dr P. Anil Kumar (*Alternate*)
Central Research Institute, Kasauli	Dr Yashwant Kumar Dr Subhadip Mahapatra (*Alternate*)
Defence Food Research Laboratory, Mysuru	Dr Joseph Kingston Dr Balakrishna (*Alternate*)
Export Inspection Council of India, New Delhi	Shri Wasi Asghar Shri Angshuman Saha (*Alternate*)
HiMedia Laboratories Pvt Ltd, Mumbai	Dr Rahul G. Warke Dr Girish B. Mahajan (*Alternate*)
ICAR - Central Institute for Fisheries Technology, Kochi	Dr Satyen Kumar Panda Dr B. Madhusudan Rao (*Alternate*)
ICAR - Indian Veterinary Research Institute, Izzatnagar, Bareilly	Dr Triveni Dutt Dr D. K. Singh (*Alternate*)
ICMR - National Institute of Nutrition, Hyderabad	Dr Naveen Kumar R. (*Alternate*)
Marine Products Export Development Authority, Kochi	Dr Sreenath P. G. Shri V. Vinod (*Alternate*)
Merck Life Sciences Pvt Ltd, Mumbai	Shrimati Sujata Saindane Shri Sachin Mali (*Alternate*)
National Accreditation Board for Testing and Calibration Laboratories, Gurugram	Shrimati Sunita Rawat Shri Vinay Tyagi (*Alternate*)
National Dairy Development Board, Anand	Shri S. D. Jaisinghani Dr Jitender Singh (*Alternate* I) Dr Naveen Kumar (*Alternate* II)
National Institute of Cholera and Enteric Diseases, Kolkata	Dr Shanta Dutta Dr Asish K. Mukhopadhyay (*Alternate*)
National Institute of Food Technology Entrepreneurship and Management, Sonipat	Dr Neetu Kumra Taneja (*Alternate*)

Organization	*Representative(s)*
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Member Secretary
SHRIMATI VARSHA GUPTA
SCIENTIST 'D'/JOINT DIRECTOR
(FOOD AND AGRICULTURE), BIS

Panel responsible for Review of Indian Standards related to Microbiological Media Ingredients, FAD 31 : Panel 3

Organization	*Representative(s)*
ICAR - Central Institute for Fisheries Technology, Kochi	DR SATYEN KUMAR PANDA (***Convenor***)
Central Research Institute, Kasauli	DR YASHWANT KUMAR
HiMedia Laboratories Pvt Ltd, Mumbai	DR RAHUL G. WARKE
	DR GIRISH B. MAHAJAN
Merck Life Sciences Pvt Ltd, Mumbai	SHRIMATI SUJATA SAINDANE

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